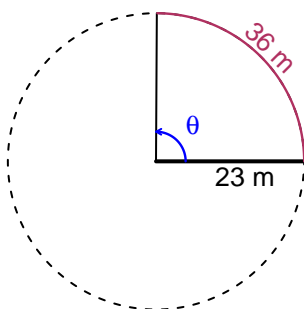# Trig Final (TEST v629)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 23 meters. The arc length is 36 meters. What is the angle measure in radians?
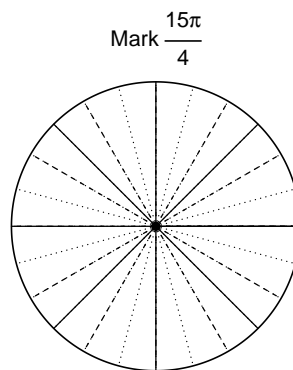

Question 2

Consider angles $\frac{-10\pi}{3}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-10\pi}{3}\right)$ and $\cos\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-10\pi}{3}$

Find $\sin(-10\pi/3)$

Mark $\dfrac{15\pi}{4}$
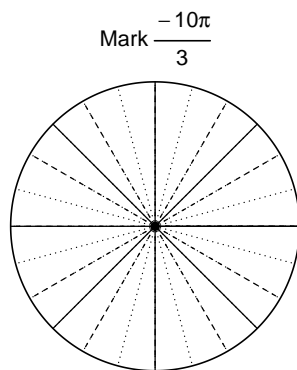
Find $\cos(15\pi/4)$

Question 3

If $\sin(\theta) = \frac{60}{61}$, and θ is in quadrant II, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 7.41$ meters, an amplitude of 6.13 meters, and a frequency of 2.77 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).